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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,190	09/12/2003	Thomas Beck	2001P02708WOUS	8295

7590 03/26/2008

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EXAMINER	
PADGETT, MARIANNE L	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
03/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/661,190	BECK ET AL.	
	Examiner	**Art Unit**	
	MARIANNE L. PADGETT	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/15/2008 has been entered.

2. Claims **32-38** are rejected under 35 U.S.C. **112, second** paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 32, **"the thickness** of **the corroded areas"** (emphasis added) introduced on lines 4-5 has unclear relationships with **"the depth** of **the area of corrosion (δ)"** (emphasis added), subsequently introduced on line 8, because it is unclear if thickness & depth are referring to same or different quantities, compounded by the uncertainty of whether or not "the corroded areas" are the same or different than any "area of corrosion" (lines 3 or 8) with or without the identifying symbol "δ", due to the use of synonymous, but inconsistent language, that has not been necessarily related to or differentiated from each other. Presently this claim language must be considered ambiguous, such that any of the possible options may be considered to read on the claims.

Note in claims 32 & 36, the symbol "δ", appears to probably be designating "the depth of the corrosion area", as a whole, as this makes the most logical sense with respect to dependent claims 33 or 37, however as it is introduced in parentheses after the "area of corrosion", it may be considered **ambiguous** as to whether it is symbolizing the area or the depth. Furthermore, this phrasing & symbology cannot be read in light of the specification, since in the specification (page 2, lines 20-31), δ = depth of penetration **of the eddy current**, which as disclosed does **not** have any apparent **direct** or necessary **exact** correspondence to the depth of the corrosion. This page 2 disclosure in combination with page 5, lines 28-31, both cited by applicants, indicate that there is a correlation of the frequency at which

the influence of the areas coated with oxidated carbides predominates with the depth of penetration of the eddy current field that allows that thickness of the corrosion to be determined, **not** that the values are identical, nor is the correlation or means of determination specified. (Also see section 5 below).

Similarly, in line 4,"at least two different measuring frequencies" is introduced, however in line 9, "the measuring frequency (f)" is introduced using an article showing antecedent basis, with implied, but without necessarily related preceding reference to "measuring frequency (f)", such that the relationship to preceding terminology is vague & indefinite, due to inconsistent terminology & not necessarily relating the modified terminology to preceding similar terms. Note the above problems can be considered to affect the clarity of claim 33 & to a lesser extent claim 37

In dependent claim 38, dependent from independent claim 36, it is unclear if "M being selected from the (Fe, Co, Ni) group" is intended to encompass only the three listed elements or is intended to include also the elements in the same group as these elements in periodic table, all of which are considered to be group VIII transition metals. It's noted that "Y from the (Y, rare earths) group" is clear, where rare earths includes the elements on the periodic table with atomic numbers from 57-71, noting this includes lanthanum (atomic number 57). Further note that this claim does not use proper Markush group terminology. It is note that a similar rejection was made previously with respect to claim 17, canceled in the 8/8/2007 response.

3. It is noted that while "anti-corrosive" may be considered a relative term, in the context that is used in the claims (& specification) describing "an anti-corrosive coating", with the claims already specifying types of corrosion being oxidated carbides & sulfidized parent material, where the parent material is nickel or cobalt based superalloy, the type of corrosion which is protected against by the claimed coating is considered adequately indicated.

As has been previously noted, while "low" & "high" are relative terms, the terminology "low-frequency" & "high-frequency" have art recognized meanings, which can be found in various sources,

such as the dictionary (e.g. Webster's, page 971). As these terms have been reintroduced into new independent claim 36, this observation is again relevant.

4. Claims **32-38** are rejected under 35 U.S.C. **112, first** paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Contrary to the suggested language in the previous action (section 2 on page 2 of the action mailed 10/17/07), which was consistent with disclosure in applicants' specification, applicants have presented their new claims, with the activating step being claimed separately from the cleaning processes in independent claims 32 & 36, such that these claims encompass the option of the two cleaning steps being completely separate from the activating step (as well as being the same), however no support has been cited to show support or enablement for such a three-step procedure. As original claim 4 had ambiguous language, where the cleaning & activating may or may not have been the same procedure, this is **not** considered new matter, however as the body of the specification was not found to provide any means of activating that was not one of the two cleaning procedures, separation of the cleaning & activating steps is **not considered enabled**. Particularly see page 7, lines 13-18, which discloses that a suitable cleaning process, such as sputtering, activates the surface at the same time that it cleans it.

5. Claims **33-35 & 37-38** are rejected under 35 U.S.C. **112, first** paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claiming the depth of the corrosion to be necessarily equal to the depth of penetration of the eddy current for essentially any frequency employed for measuring, is not supported by the specification (see above discussion in section 2), hence is **not** enabled by the specification, so that these newly added claims

33 & 37, plus their dependence contain **New Matter**. It is noted that the examination of a formula claimed to calculate a value inconsistent with what that equation calculates in the specification, cannot be properly further treated with respect to prior art.

Also, claim 35 claims the main body to be "a gas turbine component", which encompasses any of the many parts of which gas turbines are made, and while applicants have cited page 1, line 9 as providing support, all five mentions of "gas turbine" on page 1 are specifically designating "blade", with absolutely no generic disclosure to gas turbine in general or to any generic component. It is further noted that original claims 2, 4 & 8 were also directed to "a gas turbine **blade**", in fact all disclosures found by the examiner concerning any parts or structure of a gas turbine were solely directed to a gas turbine blade, hence new claim 35 is considered to encompass **New Matter**, unless a broader disclosure can be identified.

With respect to "an evaluation unit" in new claim 34, applicants cited page 9, lines 25-26, as support, which provides the disclosure "This is visible as a signal 19 in an evaluation unit 17 connected to the eddy-current probe 11", with it noted that this citation particularly refers to the illustrated "evaluation unit 17" in figure 1, which is an explicit picture of a monitor screen showing the received signal 19, thus does **not** encompass all possible types of evaluation units as claimed, whatever they may be, but only a much smaller subset that enable a visual depiction consistent with the disclosure as modified by the figure. For this reason, claim 34 encompasses further **New Matter**, above and beyond that induced by its dependence on claim 33.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 32-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Törnblom** (4,853,634), in view of **Valleau et al.** (5,028,100), and further in view of **M.J. Woulds,** "How to Cast Cobalt-Based Superalloys", or **Culling** (5,310,522), plus **Burns et al.** (6,042,898), optionally with **Collins et al.** (4,555,612).

While applicants have canceled the previous claims & submitted a set of new claims, these new claims encompass procedures & concepts already covered in the previously set forth rejection, such that these references remain applicable to the claimed process as resubmitted.

In **Törnblom**, see abstract; figures; col. 1, lines 7-14, 24-29 & 45-65; col. 2, lines 5-47; col. 3, lines 3-8 & 16-20; col. 4, lines 25-36, 54-68+, especially 31-33 & 58-63; col. 5, lines 14-45+; col. 6-8, especially col. 6, lines 1-10, 24-31 & 51-58; col. 7, lines 10-26 & 56-67; col. 8, lines 9-11, 17-27 & 48-65, which teach detection of cracks & magnetic regions that are oxide scales on hot cast billets of steel (notice is taken that steel is an iron alloy that contains carbon, i.e. carbides), via use of multifrequency eddy current testing. Törnblom discusses (col. 2) that the surface of cast billets are often coated with oxide scales of varying sizes (consider to read on claimed corrosion), which due to temperature considerations become magnetic thus causing disturbing influences on the eddy current testing equipment with respect to identification of cracked type faults. However, it is further taught (col. 5-8) that various types of cracks & oxide scale have different impedance variations at different magnitudes of different carrier frequencies & for certain frequencies, with use of various combinations of lower frequencies (for example <100 kHz) & higher frequencies (for example 1 MHz) to enable reliable discrimination between cracks and oxide scale/magnetic material. Törnblom discuss multiple steps, including where the first step chooses to use low-frequency (col. 5, lines 38-45+), also teaching with respect to frequency that the absolute value of the permeability decreases with increasing frequency because of the inherent inertia of the material with respect to rapid magnetic changes (col. 6, lines 32-41), thus appears to provide a scientific or efficiency motivation for employing the lower frequency, before the higher frequencies in the taught eddy current testing technique. Törnblom also discusses some automated evaluation techniques (i.e. evaluation units), where alarm signals may be employed for the presence of magnetic material/oxide scale, so that if desired the removal and/or elimination of the magnetic material may be performed (col. 7, line 60-col. 8, line 26).

Törnblom differs from the present claims by not specifying that when the oxide scale (≡ corroded areas) is located that the thickness thereof is ascertained, however it would have been obvious to one of ordinary skill in the art that in order to discriminate from cracks & potentially remove oxide scales as

taught, it would've been necessary to determine the thickness of the oxide scale in order to effectively carry out the teachings of the primary reference, especially considering that determining the location may be considered inclusive of determining dimensions of both the extent with respect to the surface & the depth or height of the oxide scale with respect to the surface, which considerations are inclusive of the claimed thickness. It would have been further obvious to one of ordinary skill in the art that such thickness determinations are consistent with the teachings of Törnblom, as **Valleau et al** teach employing several frequencies in order to provide accurate description of size & shape of a fault in a material with improved resolution using nondestructive eddy current testing. In Valleau et al., see the abstract; figures, especially 1; col. 1, lines 16-23; summary; col. 4, lines 7-55 describing the eddy current measuring, controlling, analyzing & display/alarm apparatus; col. 4, line 56-col. 10, line 34, especially col. 5, lines 1-10 & 21-26; col. 6, lines 46-68+; col. 7, lines 31-64; col. 8, lines 23-68; col. 9, lines 48-60+; & col. 10, lines 5-34 for extensive discussion of means of using multiple frequencies for fault detection inclusive of thickness determination, where although the exemplary techniques are mainly directed to graphitic fibers, the use of the same technique with other conductive materials, including ferrous materials, is also suggested, with teachings on how one would determine appropriate fault-response signatures for particular types of faults in other/particular materials. In col. 11, line 45-col. 12, line 29, Valleau et al. further teach inclusion of alarms in their apparatus to indicate the presence of faults, as well as steps of collecting & storing raw data, then employing programs to interpret and display the data, etc. Therefore, it would have been obvious to one of ordinary skill in the art given the teachings of Törnblom to employ multifrequency eddy current testing techniques as suggested therein to determine the thickness of the oxide scale defects, since as shown in Valleau et al., multifrequency techniques are well capable of determining thickness of faults, including for ferrous materials, such as would have been expected to include the steel billets of the primary reference, especially considering that Törnblom's suggestion of

removal in order to be effective would require knowledge of the oxide scale dimensions, including thickness.

The combination of **Törnblom, in view of Valleau** et al., while showing that eddy current measuring techniques are old and well known for oxidation corrosion measurement, including thicknesses thereof, does not teach Ni-or Co-based superalloys, nor specify that the object being tested for corrosion is a gas turbine component, such as a blade, however the article by **M. J. Woulds** (1st col., p.46; 1st, 2nd & 5th paragraphs in continued section, p.97), or the patent to **Culling** (abstract; col. 1, lines 6-21; summary; examples, especially example 1 on col. 3, lines 60-col. 4, lines 46, noting col. 3, line 68 & table 1, with the alloys of the Culling's invention have only a couple weight % Fe more than Ni, while Hastelloy X has 18.12 % Fe & 48.45 % Ni) indicate that superalloys that are cobalt-based, or Fe-Ni-Cr alloys, respectively, may be cast & may have corrosion (oxidation and/or sulfidized) problems as claimed which are desire to be minimized, as well as indicating their known usage for airfoil or turbine components. Hence, it would've been obvious to one of ordinary skill in the art when casting components of such materials, including for turbine parts, such as gas turbine blades to test such components after manufacture, i.e. casting, to insure quality of the components produced by the testing procedures, such as set forth in Törnblom, in view of Valleau et al., which combination establishes a procedure that includes testing for corrosion on metal substrates that have been cast, inclusive of oxidative corrosion which may be desired to be removed, because it is old and well-known that such corrosion can be detrimental to the useful life of such components & testing would enable both quality control and repair/removal of any corrosion found.

While the combination of Törnblom & Valleau et al., in view of M.J. Woulds or Culling is suggestive of the claimed process of casting nickel or cobalt-based superalloys materials, followed by multifrequency eddy-current testing to determine any presence & thickness of corrosion on the casting, with suggestions to remove observed contaminants/oxide, these references do not suggest any specific

contaminant removal techniques or procedures, nor are they directed to subsequent coating, such as the claimed anticorrosive coating.

Burns et al. (abstract; figures; col. 1, lines 5-30 & 57-62; col. 2, especially lines 1-9, 26-30 & 44-63; col. 3, especially lines 1-10 & 33-67, plus col. 4, lines 1-23; col. 6, example 2) also discuss superalloys substrates, where undesired oxides and contaminants are to be removed, with discussion of application of oxidation resistance metallic bond coats & ceramic layers (thermal barrier coatings). Burns et al. notes that thermal barrier coatings may be deposited directly on to the blade or may be deposited over an undercoating on the blade when using their technique. It is taught in Burns et al. that while there have been many successful varieties of coating applications for coating gas turbine engine components with metallic bond coatings (MCrAlY, where M = Ni, Co or Fe), etc., that there is a constant search for ways to improve the durability of these coatings. Burns et al. further teach a surface preparation sequence inclusive of cleaning to remove oil, other organic or carbon-forming contaminants, surface oxides and other adherent contaminants, noting that typical prior art cleaning methods include a thermal cyclic cleaning step in oxidizing atmosphere to remove various organic contaminants, followed by mechanical cleaning, such as grit blasting, etc., to remove embedded surface oxides and other undesired adherent contaminants. Burns et al. found that the coating life could be improved by 50% or more by following such prior art cleaning processes with an ionized gas stream cleaning process, such as a "reverse transfer arc cleaning" that employs ionized inert gas, i.e. a plasma cleaning process, which essentially cleans via sputter vaporization of contaminants inclusive of remaining oxides. This sequence reads on applicants' technique that comprises to cleaning processes, where one is not sufficient without the other, as well as the specifically named sequence of cleaning techniques. It would have been obvious to one of ordinary skill in the art that given the above combination of Törnblom & Valleau et al., in view of MJ Woulds or Culling, that Burns et al. provides an effective cleaning techniques to deal with oxide contaminants such as discussed in this combination, including for specific substrates such as the suggested superalloys

turbine blades, while also providing an additional reason & motivation for such cleaning and oxide removal in order to provide superior surface preparation to increase durability of the protective coatings taught to be applied thereafter.

It is noted that while Burns et al. state that process may be employed on either the superalloy substrate, or on such a substrate with an "undercoating", all their examples of their cleaning techniques that represents their improvement are applied to the bond coat, i.e. the undercoat, however it is clear & obvious from their teachings that the same cleaning techniques would have been expected to be effective & applicable to the superalloys substrate itself, for purposes of applying the metallic bond coatings (MCrAlY, where M = Ni, Co or Fe), especially considering the optional reference of **Collins et al.** (abstract; figures; col. 1, lines 6-8 & 43-col. 2, lines 16 & 61-col. 3, lines 22 & 51-57; col. 4, lines 3-65; col. 5, lines 24- 28+), who also teach plasma jet cleaning via an arc transfer process, which is discussed as applicable to superalloys substrates such as, turbine blades or buckets, for removal of contaminants particularly inclusive of oxides, where the appropriateness of the use of such cleaning techniques to remove oxides after inspection procedures is also noted, thus providing further motivation & cumulative evidence for the known & effective use of such cleaning techniques directly to the superalloys as set forth in the above combination & with respect Burns et al.

Note with respect to the particular claimed cleaning sequence of grinding, then sputtering (claim 30), grinding is a mechanical process thus encompassed by the teaching of embedded oxide removal via mechanical processes, and the ion bombardment with inert gas ions of the taught plasma jets would effect its further cleaning via sputtering, hence is considered to read on the claimed "activating", as it is providing demonstrated improved adherence. Notice is taken that grinding is a conventional mechanical removal technique used equivalently with other mechanical techniques, such as grit blasting. Therefore, it would've been obvious to one of ordinary skill in the art, that while the specifically exemplified mechanical cleaning techniques of Burns et al. did not specifically specify "grinding", that as this is a

conventional, old and well-known technique of removing material from metal objects, as well as a common mechanical removal technique, these teachings would've been suggested to one of ordinary skill in the art to employ mechanical grinding for its conventional removal purposes due to the suggestion of mechanical cleaning techniques to remove oxide contaminants.

8. Kircher et al. (6,036,995) remains cited for showing the known equivalence of grit blasting, grinding or belt sanding for removal of material on steel or superalloys substrates, inclusive of turbine components, where mentioned removed material may be metallic &/or oxides (abstract; col. 1, lines 5-8 & 35-52; col. 2, lines 1-5, 21-31 & especially 61-67; col. 3, lines 16-35+; especially col. 8, lines 20-34, especially lines 20-27).

James et al. (2002/0066770 A1 = PN 6,491,208 B2 remains of interest as cumulative to the above rejection & providing relevant teachings concerning fabrication & repair of superalloy turbine components, including blades. As previously discussed in James et al. (770), see figures 2-3; [0001-3] teaching the process is for part fabrication &/or repair, including for turbine components, noting Ni & Co-based superalloy materials for use in turbine components, such as blades, which may be cast & are known to be coated with protective coatings, including bond coatings providing oxidation resistance & improve adhesion for the thermal barrier coating, where common bond coat materials include MCrAlY, where M = Ni, Co, Fe or mixtures thereof; [0005-6] concerning the no need to repair cracks & complications due to the presence of contaminants on the surface; [0007] cleaning an area before deposition; [0022] for repair or fabrication process involving components formed of superalloy materials, where [0023] the component may be any turbine engine part & [0024] turbine parts are subjected to any of a variety of nondestructive examinations including the option of eddy current tests to identify discontinuities which may be cracks on our other types of discontinuities including those resulting from oxidation or chemical attack. Preparation of the part surface [0025] includes cleaning a way contaminants, such as products of oxidation of the base material or deposits of foreign substances, where cleaning may be by any known method. After surface

preparation [0027] deposition is then applied to the part surface &/or repair surface. While James et al.'s exemplary discussion is mainly directed towards the repair option, they explicitly teach that their technique may be employed in fabrication, as well as noting conventional use of cast superalloy materials & protective coatings as claimed, hence from these teachings of James et al. & the teachings of the above combination, which include the recognition of the presence of oxidation in casting procedures of materials such as used in James et al. The teachings of James et al. remain relevant to the above rejection as it would have been further obvious to one of ordinary skill in the art to employ eddy current testing procedures, such as taught by Törnblom, in view of Valleau et al., because the teachings of James et al. indicate that the presence of oxidation contaminants are detrimental to turbine blade components, such that they should be tested for by processes inclusive of eddy current testing & removed before proceeding with coating processes.

As previously cited as of interest for teaching mechanical cleaning techniques for turbine and/or superalloys substrates were references that included Kang (4,788,077: abstract; example 4, col. 10, lines 58-68 with nickel alloy turbine blades being grit blasted + abraded with a wheel + treated with a vibrator); Nenov et al. (5,935,407: abstract; col. 2, lines 52-col. 3, lines 16 for preparations for bond coatings for oxidative protection via machining the blade tip then cleaning such as with grit blasting); Vine et al. (4,861,618: col. 5, lines 11-30, especially 11 & 15-21 for cleaning superalloys substrates via grit blasting to remove all oxides and contaminants then plasma spraying bond coat); and Czech et al. (6,217,668 B1: abstract; col. 1, lines 5-15 & 53-col. 2, line 24; and col. 3, especially lines 42-60 for mechanically cleaning corroded superalloys surfaces, exemplified by abrasive of blasting).

(026)' Other previously cited art of interest included: JP 64-59064 to Inukai et al. teaching eddy current thickness measurement of oxide scale on steam turbine rotors; Bour et al. (6,051,972), who teach a further eddy current inspection technique using two or more frequencies to determine the condition (cracks, wear, clearance variations, etc.) of a metal body, in this case a metal (steel) to having a thin layer of material

with magnetic or electrical characteristics different from the "metal in-depth"; Oliver (5,017,869), who teaches measuring thickness of the coating using a variable-frequency eddy current, with a typical frequency sweep of between about 10 kHz-10 MHz, where an exemplary sweep raises the frequency to determine a transition frequency in the coating thickness determination (abstract; col. 1, lines 5-43 & 65-col. 2, lines 30; col. 3, lines 50-68; & claims 24-33); Beeck et al. (6,534,975 B2), has further teaching of turbine blades made of nickel-based superalloys & protective coatings inclusive of claimed MCrAlY, with eddy current determination of protective layer thickness; Jaworowski et al. (6,165,542) & Becker (6,040,694 to the same assignee as applicants) with teachings equivalent to Beeck et al.; patents to Schnell et al. (7,175,720 B2 & 7,150,798 B2), which are not prior art but have multifrequency eddy current testing systems of interest for MCrAlY coated components.

9. Claims 32-38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 16-29 & 31-32 of copending Application No. 10/525,026, in view of **Burns et al.** (6,042,898), optionally with **Collins et al.** (4,555,612), and optionally further considering **M.J. Woulds,** "How to Cast Cobalt-Based Superalloys", or **Culling** (5,310,522).

While the copending case (026)'s claims were re-listed 1/30/2008, they were not amended & are still directed to claimed eddy current testing of based bodies inclusive of claimed superalloys materials and may be blades or vanes, where the claims of the copending case (026) do not have limitations directed towards the cleaning & coating the base body after determining the degradation thereon, however the references of **Burns et al.** (6,042,898), optionally with **Collins et al.** (4,555,612), which were discussed above in section 5, provide reasons for obviousness of claimed cleaning & coating to remove known contaminants & oxides after the testing of the copending claims, which may be combined with 10/525,026 claims for substantially reasons as set forth above. It is further noted that neither Burns et al., nor the optional Collins et al. discuss how their superalloys turbine components were formed however casting is a conventional formation technique for such components, thus would have been considered by

one of ordinary skill in the art to be an obvious means of providing the taught turbine superalloys components, or optionally further considering **M.J. Woulds,** "How to Cast Cobalt-Based Superalloys", or **Culling** (5,310,522), also discussed above, either of which substantiate the conventionality of employing such casting methods for superalloys turbine components.

It is further noted that while the copending case is more detailed concerning the eddy current multifrequency process & claims limitations in different orders, the process claimed therein encompasses the broader process of the present claims. Also while the copending case's claims have been amended to delete gas turbine from the description of the component, it still has a dependent claim 16 directed to the component being a blade or a vane, such that considering the materials claimed for the base body & the type of degradation (oxidized carbides) being tested for, it would've been obvious to one of ordinary skill in the art that the types of blades and vanes contemplated were gas turbine blades, especially in light of the specification. Note that determination of a depth of a degraded region is considered equivalent to determination of its thickness.

10. Applicant's arguments filed 1/15/2008 & discussed above have been fully considered but they are not persuasive.

It is noted that while applicants note the 103 rejection applied to the cancel claims (page 4 of the 1/15/2008 remarks), they have provided no reasons why that rejection is not applicable to the amended claims, which encompass limitations as previously presented, although in different combinations.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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/Marianne L. Padgett/
Primary Examiner, Art Unit 1792

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3/22/2008